

WHAT IS CLAIMED IS

- 1 1. A man-rated device to which a person is removably secured, the device for
2 use with an associated structure which the person intends to access, the device comprising:
3 a base having an element adapted to be mounted in operative proximity to the
4 associated structure;
5 a member being substantially cylindrical and having one end connected to the
6 base, another end of the member having means for removably securing a person thereto, the
7 member having a corresponding dynamic rating; and
8 a safety line secured to both ends of the member, the safety line having a
9 tensile strength equal to or greater than the dynamic rating of the member,
10 wherein the member is formed of at least one material selected from the group
11 consisting of aluminum, carbon fiber composites, KEVLAR fibers, fiberglass, and aluminum-
12 ceramic composites.
- 1 2. The device of claim 1, wherein the device comprises a transformer-type device
2 with the member extending substantially vertically from the base.
- 1 3. The device of claim 1, wherein the member is formed substantially of a
2 carbon-fiber composite.
- 1 4. The device of claim 1, wherein the ends of the member include a reinforced
2 portion to increase the strength of the member under compressive loads.
- 1 5. The device of claim 4, wherein the reinforced portion comprises an insert at
2 the end of the member secured to the base.
- 1 6. The device of claim 2, wherein the member is comprised of a tube, the safety
2 line extending within the tube.
- 1 7. The device of claim 6, further comprising an extension mast telescopically
2 received in the tube, and a hoisting means removably secured to the extension mast.
- 1 8. The device of claim 1, further comprising multiple, modular components
2 dimensioned to be man-rated;
3 wherein the modular components include at least one joint section and at least one
4 extension arm, the joint section including an elbow having two legs extending at a

5 predetermined angle from the central axis, the extension arm having a proximal end and a
6 free end, the at least one joint section and extension arm having a dynamic rating
7 corresponding to a person secured to the device; and

8 wherein one leg of the elbow is removably secured to one of the ends of the member,
9 the other leg of the elbow is removably secured to the proximal end of the extension arm, the
10 free end of the extension arm being spaced a predetermined lateral distance from the post to
11 define an offset,

12 wherein the extension arm is formed of at least one material selected from a group
13 consisting of aluminum, carbon fiber composites, KEVLAR fibers, fiberglass, and aluminum-
14 ceramic composites.

1 9. The device of claim 8, wherein a second safety line is secured to both ends of
2 the extension arm, the second safety line having a tensile strength equal to or greater than the
3 dynamic rating of the extension arm.

1 10. The device of claim 9, wherein a third safety line is secured between both legs
2 of the elbow, the third safety line having a tensile strength equal to or greater than the
3 dynamic rating of the joint section. ✓

1 11. A man-rated transformer-type device to which a person is removably secured,
2 the device for use with an associated structure which the person intends to access, the device
3 comprising:

4 a base having an element adapted to be mounted in operative proximity to the
5 associated structure;

6 a member being substantially cylindrical and hollow and having one end
7 connected to the base, another end of the member having means for removably securing a
8 person thereto, the member having a corresponding dynamic rating; and

9 a safety line connected to both ends of the member, the safety line having a
10 tensile strength equal to or greater than the dynamic rating of the member,

11 wherein the member extends substantially vertically from the base, the
12 member being formed of at least one material selected from the group consisting of
13 aluminum, carbon fiber composites, KEVLAR fibers, fiberglass, and aluminum-ceramic
14 composites.

1 12. The device of claim 11, wherein the member comprises a tube, the safety line
2 extending within the tube.

1 13. The device of claim 11, wherein the member is formed substantially of a
2 carbon-fiber composite.

1 14. The device of claim 11, wherein the ends of the member include a reinforced
2 portion to increase the strength of the member under compressive loads.

1 15. The device of claim 14, wherein the reinforced portion comprises an insert at
2 the end of the member secured to the base.

1 16. The device of claim 12, further comprising an extension mast telescopically
2 received in the tube, and a hoisting means removably secured to the extension mast.

1 17. A man-rated transformer-type device to which a person is removably secured,
2 the device for use with an associated structure which the person intends to access, the device
3 comprising:

4 a base having an element adapted to be mounted in operative proximity to the
5 associated structure;

6 a member being a tube having one end connected to the base and another end having
7 means for removably securing a person thereto, the member having a corresponding dynamic
8 rating; and

9 a safety line connected to both ends of the member and extending inside the member,
10 the safety line having a tensile strength equal to or greater than the dynamic rating of the
11 member,

12 wherein the member extends substantially vertically from the base, the member being
13 formed substantially of a carbon-fiber composite.

1 18. The device of claim 17, wherein the ends of the member include a reinforced
2 portion to increase the strength of the member under compressive loads.

1 19. The device of claim 18, wherein the reinforced portion comprises an insert at
2 the end of the member secured to the base.

1 20. The device of claim 19, further comprising an extension mast telescopically
2 received in the tube, and a hoisting means removably secured to the extension mast.

21. A man-rated device comprising:
multiple, modular components dimensioned to be man-rated when assembled, the
components including:
a base with a structure adapted to be mounted in operative proximity to a confined
space;
at least two tubes, one of the tubes comprising a post removably secured to the base,
and the other of the tubes comprising an extension arm, wherein the tubes have a dynamic
rating corresponding to a person secured to the device;
an elbow between the post and the extension arm wherein the elbow has a dynamic
rating corresponding to a person secured to the device;
a safety line connecting at least two modular components; and
the components being removably interconnected without welding between the
components, whereby the components can be readily assembled and disassembled, wherein
the tubes are formed of at least one material selected from the group consisting of aluminum,
carbon fiber composites, KEVLAR fibers, fiberglass, and aluminum-ceramic composites.